AN INITIATIVE OF

Making More From Sheep

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Improving lamb survival by reducing mob size at lambing

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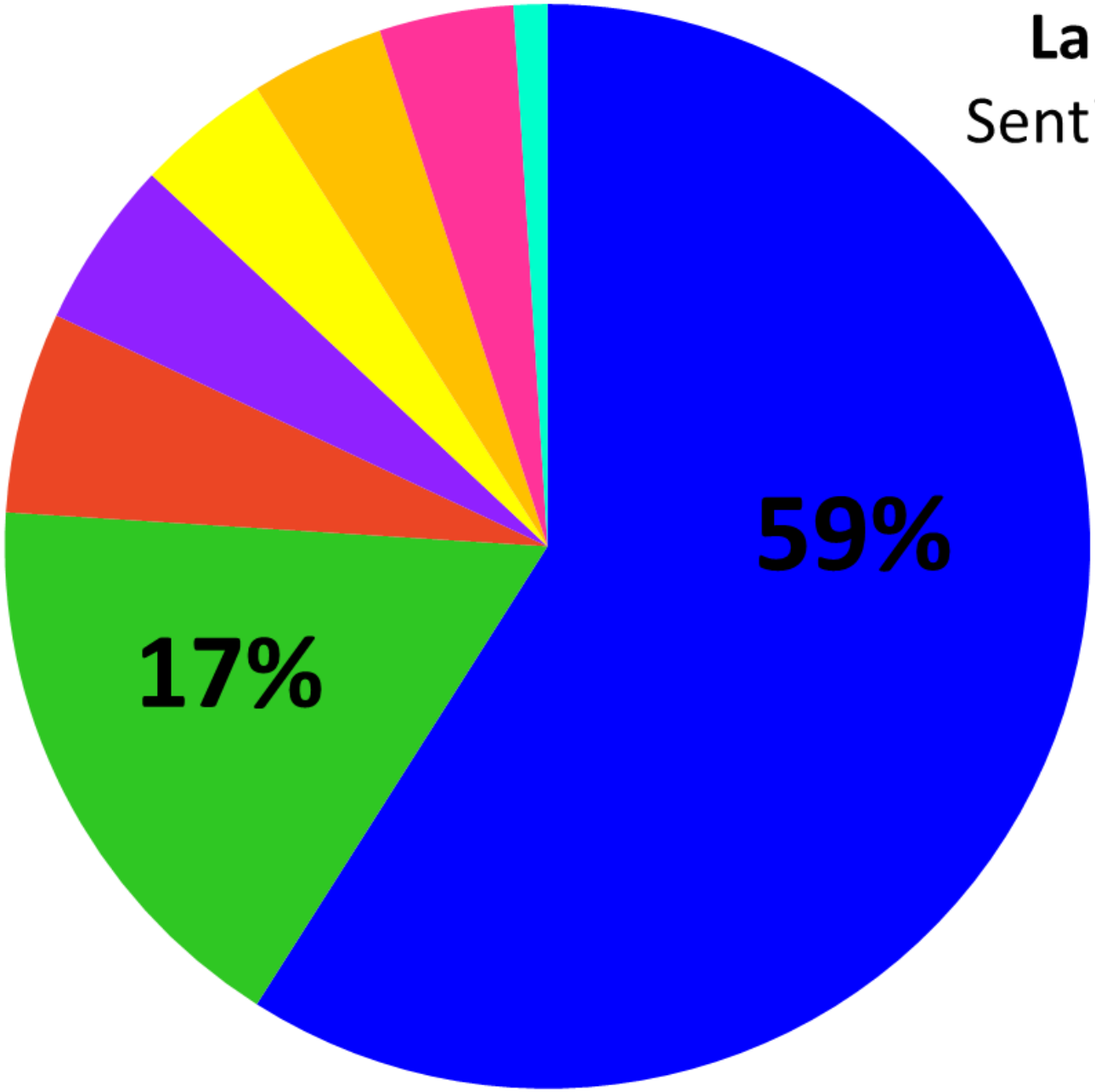
Outline

- Tools for increasing lamb survival
- National lambing density project
  - On-farm research
  - Producer data
  - Economics & putting it into practice
  - Key messages

Lamb post-mortem results

Sentinel Flock Project (Vic DEPI)



- Starvation / Mismothering 59%
- Dystocia 17%
- Exposure 6%
- Undiagnosed 5%
- Primary predation 4%
- Premature / Dead in utero 4%
- Infection 4%
- Misadventure 1%

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Miss-mothering in Action!

250 → 125 ewes @ 14.4 DSE/ha =
+$2.5/twin Merino ewe & +$3.5/twin maternal ewe

Pasture utilisation
+$50-100/ha per 10% increase

Shelter for twin ewes
+$1.25-3/ewe

+$1.25/ewe or
+$4/twin ewe

Pregnancy scan for multiples

+$0.8/ewe

(Young *et al.* 2014, 2016)

Improving lamb survival – building the pyramid

Producer surveys

- 1.4% and 3.5% decrease in survival of singles and twins per +100 ewes
- 0.7% decrease in survival per +1 ewe/ha

Current recommendation for adult twin-bearing ewes

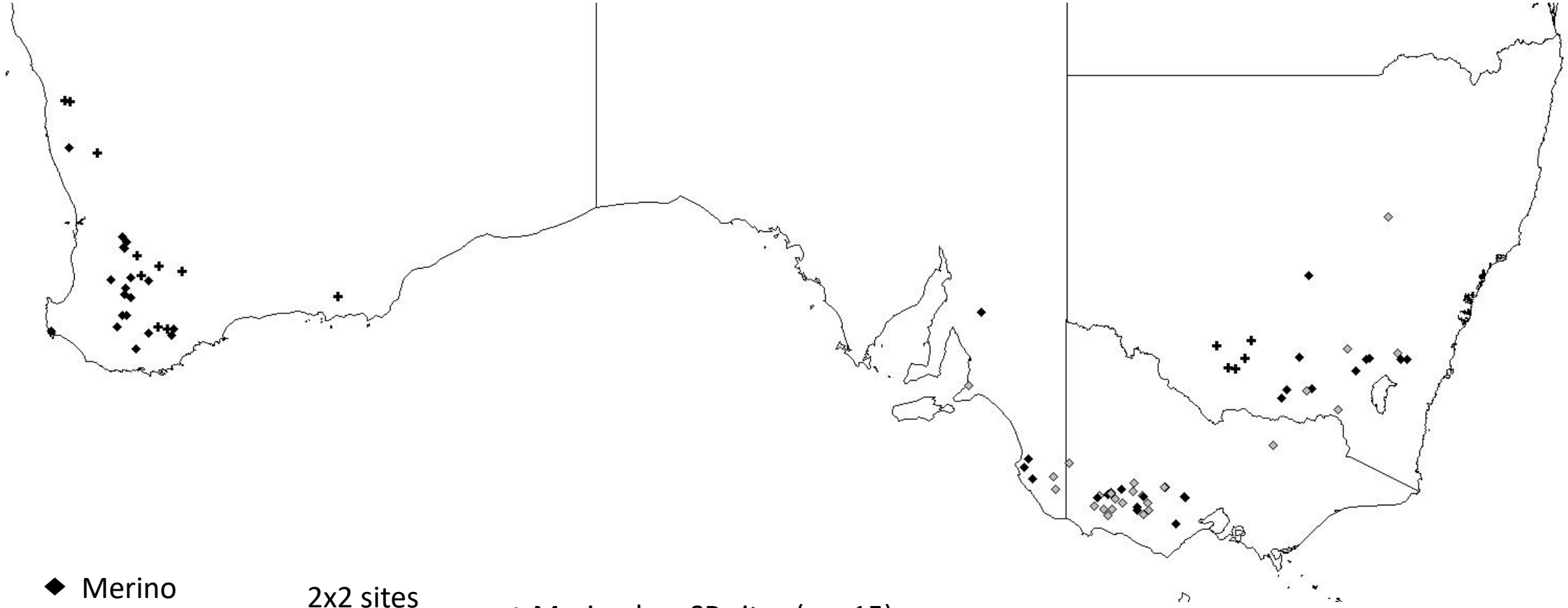
Mob size of twin-bearing ewes	100	250
Difference in lamb survival (%)	5.25	
Difference in marking rate (%)	10.5	

National lambing density project

- **On-farm research – survival of twins**
  - 70 research sites to investigate the effects of mob size and stocking rate
  - 15 research sites to investigate the effect of mob size when ewes lamb at low stocking rates

- **Producer survey data**

On-farm research sites



◆ Merino
◇ Non-Merino

2x2 sites
(*n* = 70)

+ Merino low SR sites (*n* = 15)

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On-farm research sites

Day 140 from rams in

Allocate ewes into mobs

Day 140 & lamb marking

Condition score

Assess pasture (FOO, Quality etc)

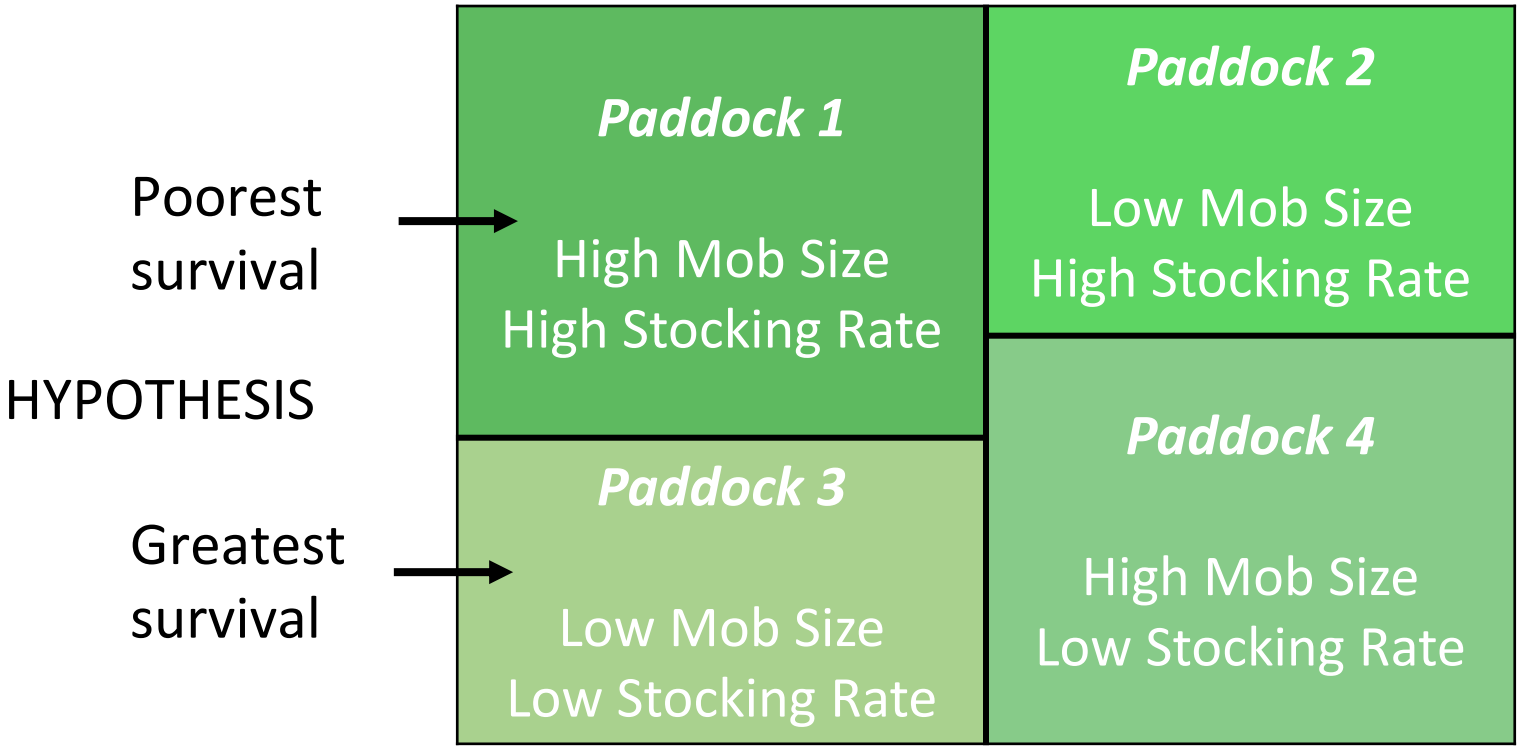
Lamb marking

Count lambs

- Paddock characteristics
- Weather data

On-farm research sites- 2x2s

- Adult, twin-bearing Merino or Non-Merino ewes



On-farm research sites- 2x2s

Mob size			
		Average	Range
Merino	High	242	189 – 432
	Low	98	70 – 261
Non-Merino	High	243	188 – 510
	Low	97	70 – 210

On-farm research sites- 2x2s

		Mob size		Stocking rate (ewes/ha)	
		Average	Range	Average	Range
Merino	High	242	189 – 432	7.3	3.9 – 12.2
	Low	98	70 – 261	4.8	1.7 – 10.0
Non-Merino	High	243	188 – 510	8.1	5.0 – 11.2
	Low	97	70 – 210	5.9	3.1 – 8.1

On-farm research sites- 2x2s

Merino		
	Average	Range
CS at lambing	3.1	2.4 – 3.9
FOO at lambing (kg DM/ha)	1530	120 – 4180
Shelter availability (% of paddock)	17	0 – 80

On-farm research sites- 2x2s

	Merino		Non-Merino	
	Average	Range	Average	Range
CS at lambing	3.1	2.4 – 3.9	3.2	2.5 – 3.8
FOO at lambing (kg DM/ha)	1530	120 – 4180	1720	680 – 3440
Shelter availability (% of paddock)	17	0 – 80	7	0 – 30

On-farm research sites- 2x2s

- Lamb survival 2.5% greater at lower mob sizes
- No effect of stocking rate (SR) or relationship between mob size & SR

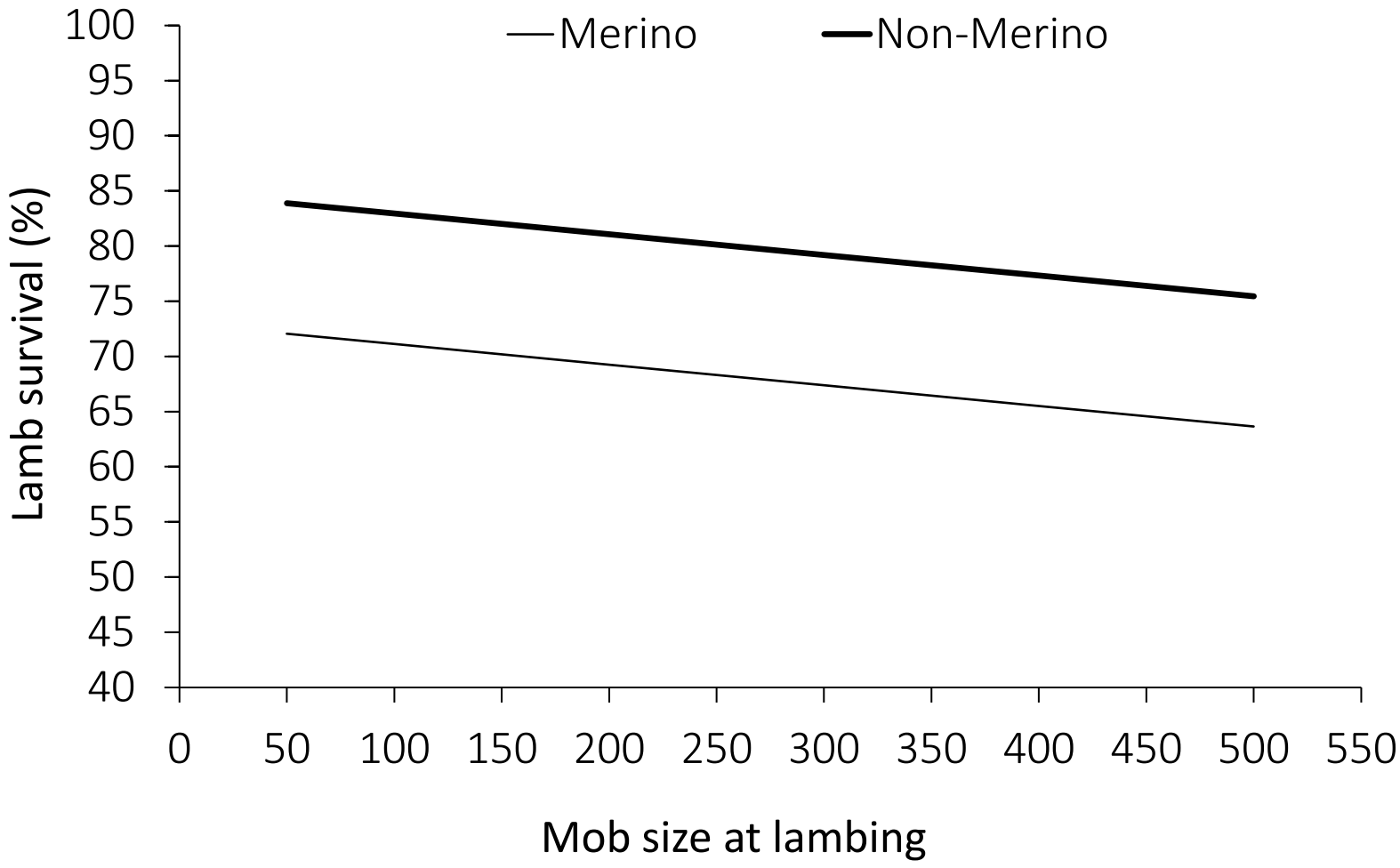
	High mob size + High SR	High mob size + Low SR	Low mob size + High SR	Low mob size + Low SR
Merino	68.2%	68.9%	71.0%	71.1%

On-farm research sites- 2x2s

- Lamb survival 2.5% greater at lower mob sizes
- No effect of stocking rate (SR) or relationship between mob size & SR

	High mob size + High SR	High mob size + Low SR	Low mob size + High SR	Low mob size + Low SR
Merino	68.2%	68.9%	71.0%	71.1%
Non-Merino	80.2%	80.9%	83.0%	83.1%

Reduce mob size by 100 = 2% increase twin lamb survival



On-farm research sites- Mob size at low SR

- Adult, twin-bearing Merino ewes lambing at high vs low mob size

State	High mob size		Low mob size		Stocking rate (ewes/ha)
	Average	Range	Average	Range	Range
NSW	763	639 – 976	435	338 – 554	0.3 – 1

On-farm research sites- Mob size at low SR

- Adult, twin-bearing Merino ewes lambing at high vs low mob size

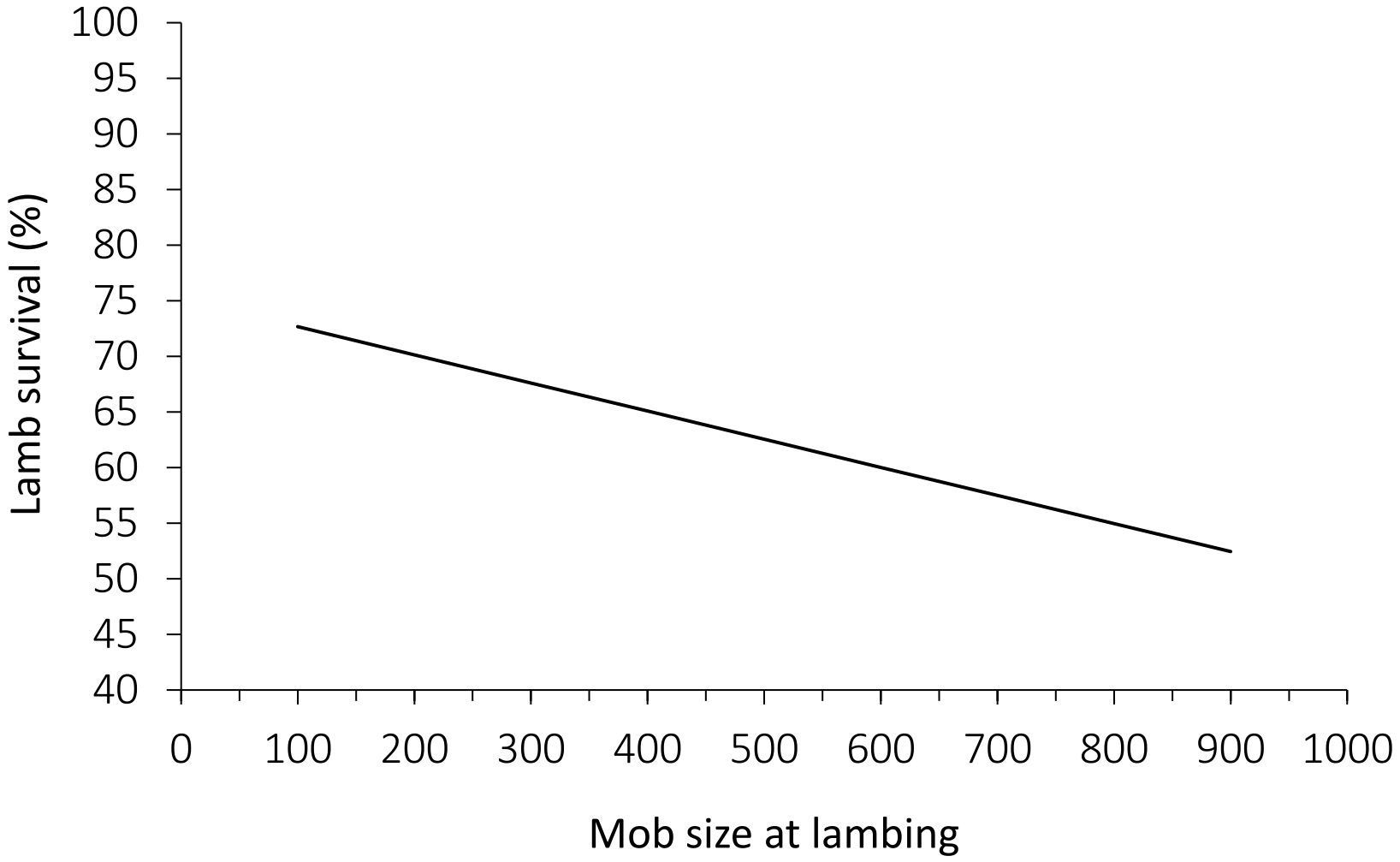
State	High mob size		Low mob size		Stocking rate (ewes/ha)
	Average	Range	Average	Range	Range
NSW	763	639 – 976	435	338 – 554	0.3 – 1
WA	299	255 – 340	117	93 – 190	1 – 3.8

On-farm research sites- Mob size at low SR

- Survival of twin-born Merino lambs greater at lower mob sizes

	High mob size	Low mob size
NSW	60.2% (763)	70.9% (435)
WA	62.8% (299)	66.1% (117)

Reduce mob size by 100 = 2.5% increase twin lamb survival



On-farm research sites- Key findings

- **Mob size by 100 twin-bearing ewes = 2 – 2.5% lamb survival**

- No relationship with;
  - Stocking rate (0.5 – 12 ewes/ha)
  - Merino or non-Merino ewe breed
  - Ewe condition score at lambing (2.4 – 3.8)
  - FOO at lambing
  - Paddock characteristics

Putting it all together

↓ Mob size at lambing by 100 ewes = ↑ 2.25% survival of twins

- Consistent effect across Merino and non-Merino breeds
- Potential for increased benefits when lambing in autumn or when seasonal conditions are poor

+ Reducing paddock size increases pasture utilisation

Factors affecting the optimum mob size

- **Cost of fencing and requirement for water** (↓cost = ↓mob size)
- **Stocking rate** (↑SR = ↓mob size)
- **Pregnancy status** (optimum mob size for twins is 40-50% that for singles)
- **Target Return On Investment** (↑ROI = ↑mob size)
- **Breed and lamb price** (maternal twins & ↑$lamb = ↓mob size, but smaller effect)
- **Capitalising on improved pasture utilisation** (↓mob size)

Optimum mob size- +/- pasture utilisation

			Without pasture utilisation		With pasture utilisation	
	DSE/ha	**Fence type**	**Twin**	**Single**	**Twin**	**Single**
MERINO	14.4	Permanent	77	163	47	66
	14.4	Temporary + water	52	107		
	14.4	Temporary, no water	23	53		
NON-MERINO	14.4	Permanent	66	165	41	59
	14.4	Temporary + water	45	109		
	14.4	Temporary, no water	19	54		

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Optimum mob size- varying Return on Investment

			5% ROI		50% ROI	
	DSE/ha	**Fence type**	**Twin**	**Single**	**Twin**	**Single**
MERINO	14.4	Permanent	77	163	213	453
	14.4	Temporary + water	52	107	140	300
	14.4	Temporary, no water	23	53	70	170
NON-MERINO	14.4	Permanent	66	165	183	458
	14.4	Temporary + water	45	109	123	305
	14.4	Temporary, no water	19	54	60	173

Putting it into practice

- Scenario;
  - 250 → 125 twin-bearing ewes @ 14.4 DSE/ha
  - Lamb at $6/kg
  - Subdivide with a permanent fence + supply water, including benefits of pasture utilisation
- Additional income
  - Merinos = $87/ha = $10.9/twin ewe
  - Non-Merinos = $107/ha = $13.4/twin ewe
- Investment
  - Merinos = $8650 ($277/ha) = ROI 31% = fencing paid off in 4 years
  - Non-Merinos = $8390 ($268/ha) = ROI 40% = fencing paid off in 3 years

Putting it into practice

- Greater returns from subdividing larger mobs
- Prioritise smaller paddocks for twins
- Fencing - permanent or temporary (± water)
- Reallocation of mobs to existing paddocks
  - Up to $0.34/Merino ewe (scanning 120%)
  - Up to $0.7/non-Merino ewe (scanning 150%)
- Mixing singles and twins for lambing compromises resource allocation, management and potentially profitability

Lamb marking is your yield mapping day

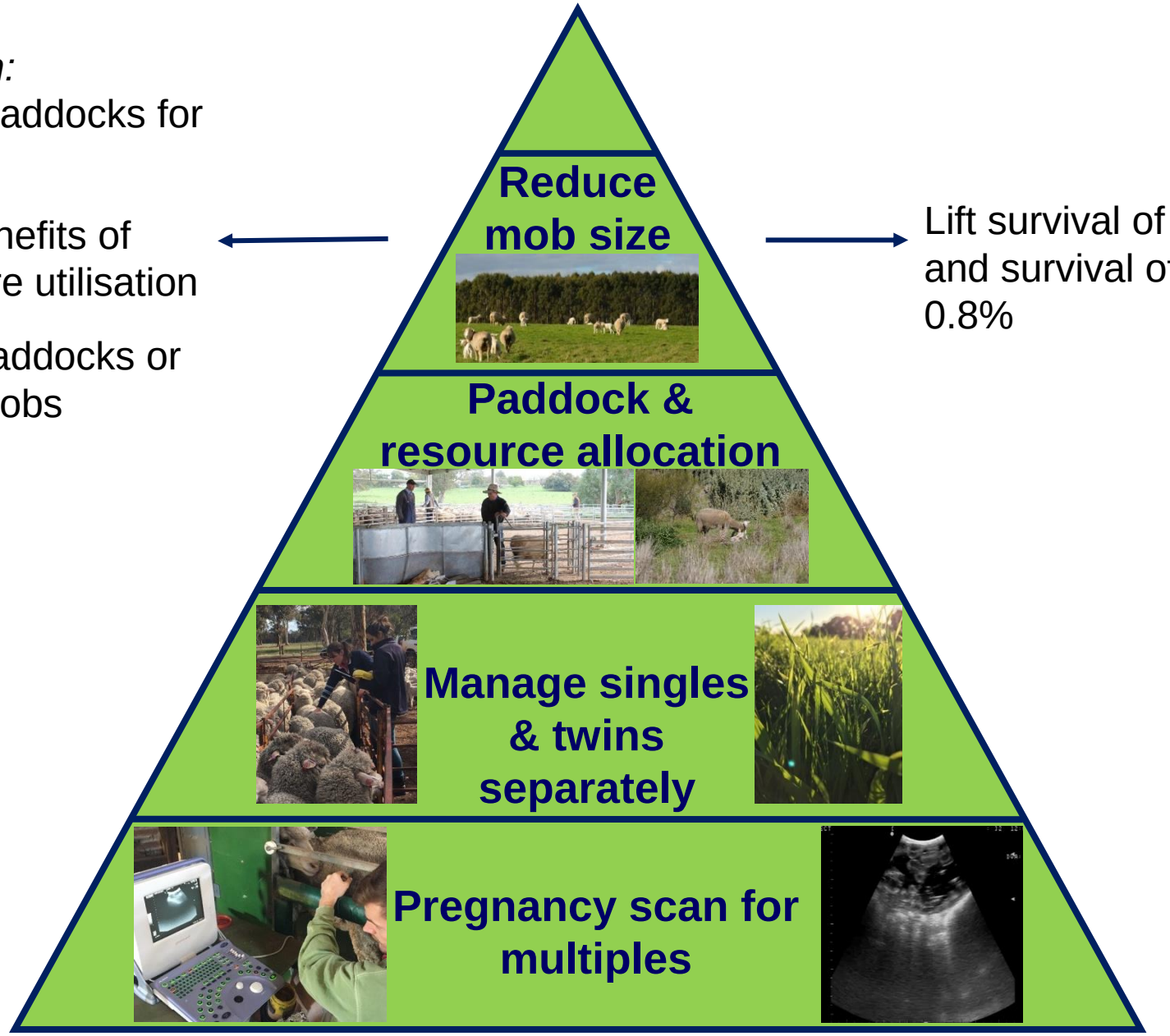
- Mark mobs in lambing mobs (don't box up)
- Collect good data (count all lambs and ewes)
- Record marking result against each paddock
- Identify lambs born as singles and twins (using either a numbered tag or ear notch)
- Wet-dry ewes every year (identify dry ewes)

Effect of reducing mob size at lambing by 100 ewes

Experiment	Singles	Twins
On-farm 2x2 sites	-	2%
On-farm mob size at low SR	-	2.5%
National survey	0.3%	1.1%
BWBL survey	1.4%	3.5%
Overall average	0.8%	2.25%

Putting it into action:

- Prioritise small paddocks for twins
- Capitalise on benefits of increased pasture utilisation
- Subdivision of paddocks or reallocation of mobs



Lift survival of twins by 2.25% and survival of singles by 0.8%

Lift ewe survival by up to 50% and lamb survival by 10% +